

## STS 125 Samples: The Hubble Servicing Mission

The toxicological assessments of 2 grab sample canisters (GSCs) from the Shuttle are reported in Table 1. Analytical methods have not changed from earlier reports. The recoveries of the 3 surrogates (<sup>13</sup>C-acetone, fluorobenzene, and chlorobenzene) from the middeck GSC were 95%, 93%, and 95%. The preflight sample did not have surrogate standards present. Based on the end-of-mission sample, the Shuttle atmosphere was acceptable for human respiration.

Table 1. Analytical Summary of Shuttle Samples

| Sample Location       | Date of Sample | NMVOCs <sup>a</sup><br>(mg/m <sup>3</sup> ) | Freon<br>218<br>(mg/m <sup>3</sup> ) | T<br>Value <sup>b</sup><br>(units) | Alcohols<br>(mg/m <sup>3</sup> ) | Formaldehyde<br>(µg/m <sup>3</sup> ) |
|-----------------------|----------------|---|--------------------------------------|------------------------------------|----------------------------------|--------------------------------------|
| Preflight             | 5/11/09        | 1.7   | n/a                                  | 0.64                               | 0.37                             | --                                   |
| Middeck (end mission) | 5/22/09        | 3.8   | n/a                                  | 0.20                               | 0.67                             | --                                   |

<sup>a</sup> Non-methane volatile organic hydrocarbons, excluding Freon 218

<sup>b</sup> Calculated excluding CO<sub>2</sub>, formaldehyde, and siloxanes.

Preflight T values are typically less than 0.1 units. The high T value in the preflight sample was due mostly to propenal (T = 0.42 units), which was identified at a trace level in the sample. Because this compound has a very low spacecraft maximum allowable concentration, just a trace causes a major contribution to the total T value. None-the-less, based on very limited sampling, no compound was found that could be a threat to crew health or performance.



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Appendix 1: Table of concentrations in the air samples.

Appendix 2: Table of T values calculated from appendix 1.